

At page 2, paragraph 3 of the Official Action, the Examiner has maintained the rejection of claims 1 – 7, 10 – 17, and 20 – 25 as being obvious over the Tamrock publication.

At page 4, paragraph 4 of the Official Action, the Examiner has maintained the rejection of claims 8 – 9 and 18 – 19 as being obvious over a combination of the Tamrock publication and the Hobhouse patent (U.S. Patent No. 3, 550, 697).

Claims 1 and 11 are the only independent claims pending in this patent application. Therefore, for the purpose of simplifying the issues, the prior art rejection of the claims will be discussed only with respect to independent claims 1 and 11. If these claims are allowed, the remaining rejected dependent claims will be allowable, at least for the same reasons as their respective parent independent claims. Applicant respectfully requests reconsideration and withdrawal of the prior art rejection raised against independent claims 1 and 11 for the reasons discussed as follows.

At page 2, paragraph 3 of the Official Action, the Examiner states that page 32, paragraph 3 of the Tamrock publication discloses a method comprising the steps of controlling the flush power and at least one of percussion power and rotational power (emphasis added). Applicant respectfully disagrees with the Examiner's conclusion. Page 32, paragraph 3 of the Tamrock publication states, in pertinent part:

“The relative amount of fines produced is a parameter of energy consumption efficiency in rock drilling. Optimum efficiency is obtained when the ratio of fines to total breakage is minimized. Further improvements in rock breakage efficiency can be accomplished by optimizing the load on the bit (percussion and feed force), bit geometry ...bit rotation... and flushing (removal of cuttings).” [Emphasis added].

However, this portion of the Tamrock publication, relied upon by the Examiner in the Official Action, does not refer to controlling the flush power. Instead, it addresses optimizing flushing. Flushing can be optimized without adjusting the flush power. For example, the Tamrock publication states at page 38 that the dust binding capacity of flushing water may be increased by adding foam to the flushing water. The Tamrock publication, therefore, does not disclose a method comprising the step of controlling the flush power. Moreover, Tamrock does not disclose that flushing can be optimized by controlling flush power. In fact, Tamrock does not even refer to flush power, but addresses only optimizing flushing, and not flush power.

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The Examiner, at page 3 of the Official Action, states “...Although Tamrock teaches optimizing the power consumption of each sub-process, Tamrock does not explicitly recite controlling the power consumption of each process simultaneously...”. [emphasis added].

Applicant respectfully disagrees with the Examiner’s conclusion that Tamrock teaches optimizing the power consumption of each sub-process. On the contrary, Tamrock discloses

optimizing the percussion force, bit rotation, and flushing, and not controlling the percussion power, rotational power, and flush power.

More specifically, the Tamrock publication fails to disclose controlling the flush power and at least one of the percussion power and rotational power such that total power consumption of each sub-process is controlled, as the Examiner concedes at page 3 of the Official Action (“...Tamrock does not explicitly recite controlling the power consumption of each sub-process simultaneously...”).

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In the Amendment filed on January 24, 2011, Applicant presented substantial arguments that the Tamrock publication teaches against adjusting flush power during the actual drilling of a hole to optimize power consumption during the drilling process, because the Tamrock publication discloses only pre-setting the value of flush power prior to the actual drilling, and maintaining the pre-set value of flush power throughout the actual drilling phase of the drilling process. The Examiner concedes this at page 3 of the latest Official Action (“...Tamrock fails to disclose adjusting flush power during the actual drilling of the hole...”).

However, at page 5 of the Official Action, the Examiner states:

“...Tamrock teaches adjusting a parameter (feed force) during the actual drilling process, and it would have been considered obvious to one of ordinary skill in the art to adjust other parameters, such as flush power, during the actual drilling of the hole to optimize power consumption during the drilling process.” [Emphasis added].

Applicant respectfully disagrees with the Examiner’s conclusion. In the first instance, there is simply no support in the prior art itself for the conclusion reached by the Examiner. More importantly, the disclosure of the Tamrock publication expressly states, at page 35:

“Feed force is required to keep the shank in contact with the rock drill and the drill bit in contact with the rock. This maximizes the transfer of percussion impact force from the drill bit to the rock. When percussion pressure is increased feed pressure must also be increased. ...” [Emphasis added].

Therefore, Tamrock discloses that feed force/feed pressure is related to, and adjusted in accordance with, the percussion pressure. The section of the Tamrock publication entitled “Feed” fails to mention flushing or flush power, and the section of the Tamrock publication entitled “Flushing” fails to mention feed force/feed pressure. Accordingly, since the Tamrock publication fails to disclose, suggest or recognize that flush power and feed force/feed pressure are related in any manner, this publication would not suggest to a person skilled in the relevant art to adjust flush power if or when adjusting the feed force during actual drilling. The Examiner’s assertion to the contrary is simply not supported by the disclosure of the applied prior art publication itself.

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For the reasons discussed herein, Applicant respectfully submits that the Tamrock publication fails to suggest the method defined by independent claim 1 or the system defined by independent claim 11 when all positively recited features of these claims are considered in the patentability determination.

As discussed herein, the Tamrock publication, which advocates pre-setting flush power prior to actual drilling of a hole, teaches directly against a positive limitation in both of the independent claims that flush power is adjusted during actual drilling of the hole.

The Examiner's response to this argument, that Tamrock teaches adjusting a parameter (feed force) during the actual drilling process will also result in adjustment of flush power, is a conclusory statement which is not supported by the disclosure of the Tamrock publication itself (Tamrock fails to disclose any relationship whatsoever between feed force/feed pressure and flush power), or any other evidence of record.

As also discussed herein, the Examiner's conclusion that the Tamrock publication discloses controlling the flush power and at least one of percussion power and rotational power

is simply not supported by the disclosure of the Tamrock publication itself which refers to only to optimizing flushing, which is different from controlling the flush power.

Applicant respectfully submits that the continued rejection of independent claims 1 and 11 over the Tamrock publication is based upon an erroneous interpretation of this reference. It is well established that references can only be modified to reject a claim if there is a teaching or suggestion in the prior art itself, or within a common knowledge of a person of ordinary skill in the relevant art, to make the modification. In the instant case, the modifications proposed by the Examiner to the Tamrock publication are 1). contrary to the actual disclosure of the Tamrock publication, and 2). not supported by the disclosure of the Tamrock publication itself. Therefore, Applicant submits that the only basis for modifying the disclosure of the Tamrock publication, as proposed by the Examiner in the Official Action, can only be based upon using Applicant's own disclosure as a guide for the proposed modifications. However, using an Applicant's own disclosure for modifying a prior art reference to reject a claim, constitutes an improper hindsight modification to the reference, which is not suggested or recognized by the prior art itself. Simply stated, as a result of the diverse and contrary teachings of the Tamrock publication, there is clearly no teaching or suggestion in the prior art itself, or within the common knowledge of a person of ordinary skill in the relevant art, to modify the Tamrock publication in any manner rendering independent claims 1 and 11 obvious, without the benefit of the teachings of Applicant's own disclosure.

Applicant respectfully submits that independent claims 1 and 11 are in condition for allowance. The remaining rejected dependent claims, which depend directly or indirectly from one of the two independent claims, are allowable, at least for the same reasons as their respective parent independent claim.

Applicant respectfully submits that this patent application is in condition for allowance, and favorable action is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'M P Stone', written in a cursive style.

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